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Parahemionitis, a New Genus of Pteridaceae

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Beddome (1883) redescribed and illustrated two species of *Hemionitis* L. from India, *H. arifolia* (N.L. Burm.) T. Moore and *H. griffithii* (T. Moore) J. D. Hook & Thomson. The latter species is now known as *Stegnogramma griffithii* (T. Moore) K. Iwats. and is a member of the Thelypteridaceae. The generic affinity of the former species has remained problematical. Tryon et al. (1990, p. 245) said, "*Hemionitis arifolia* (Burm.) Moore is similar to *Paraceterach* in some technical characters, but differs in its dimorphic leaves and simple, cordate to hastate lamina with sparse indument. It is not readily included in any recognized genus." Tryon & Tryon (1982, p. 280) said that "it may be related to *Syngramma* or a paleotropical element of *Doryopteris*." Tryon & Lugardon (1991, p. 173) said that it "is an apogamous tetraploid that is excluded (from *Hemionitis*) on the basis of its distinctive morphology as well as its flavonoid composition."

According to D. B. Lellinger (in litt.), the lamina indument of *H. arifolia* is unlike that of *Syngramma* and *Doryopteris*; it appears to be more like that of *Hemionitis* and its relatives. The stipe base and rhizome indument of *H. arifolia* is also unlike that of *Syngramma* and *Doryopteris*; it appears to resemble that of *Cheilanthes* and its relatives. The venation of *H. arifolia* is unlike that of *Cheilanthes* and *Syngramma*; it resembles, but does not exactly match, that of *Doryopteris* in forming polygonal areolae without included veinlets.

Because *H. arifolia* does not fit comfortably in any existing genus of the Pteridaceae, I have thought it best to provide it with a new generic name. I previously attempted to do so (Panigrahi, 1991, 12–13), but failed to provide a Latin description, which I thought at the time was not necessary under Art. 42.1 of the Code. This is remedied below:

Parahemionitis Panigrahi, gen. nov. (Fig. 1) — TYPE (and sole species): *Asplenium arifolium* N. L. Burm. [= *Parahemionitis arifolia* (N. L. Burm.) Panigrahi, comb. nov., based on *Aspenium arifolium* N. L. Burm. Fl. Ind. 231. 1768].

Ex *Hemionitide* L. sensu stricto (*H. levyi* Fourn. excepto) laminibus integris, laminis sterilibus ovato-cordatis et laminis fertilibus hastato-triangularibus, non lobatis differt; ex *Doryopteride* J. Smith laminis pilosis non glabris differt.

Rhizome erect or ascending, the scales linear, strongly bicolorous. Fronds numerous, simple, dimorphic, crowded on the rhizome; stipes stout, blackish, nitid, sparsely scaly above the base, the single vascular bundle U- to V-shaped; laminae chartaceous, dark green, the margins slightly revolute, with a prominent, black midrib and one pair of very short to long, basal primary veins sometimes visible on the abaxial surface of the laminae, the venation otherwise occult (but visible with transmitted light), areolate, the areolae polygonal, elongate, largest near the midrib, spreading outward toward the margin, lacking included veinlets. Sterile fronds several, shorter than the fertile ones and forming a rosette; stipes (1)4–10 cm long; laminae cordate or rarely hastate, with usually round basal lobes and a narrow sinus, often bearing buds at the base, sparsely pilose on the abaxial surface, the hairs obscurely jointed, tan. Fertile fronds 1 – few, longer than the sterile ones, erect; stipes (8)10–25(30) cm long; laminae hastate with pointed (rarely

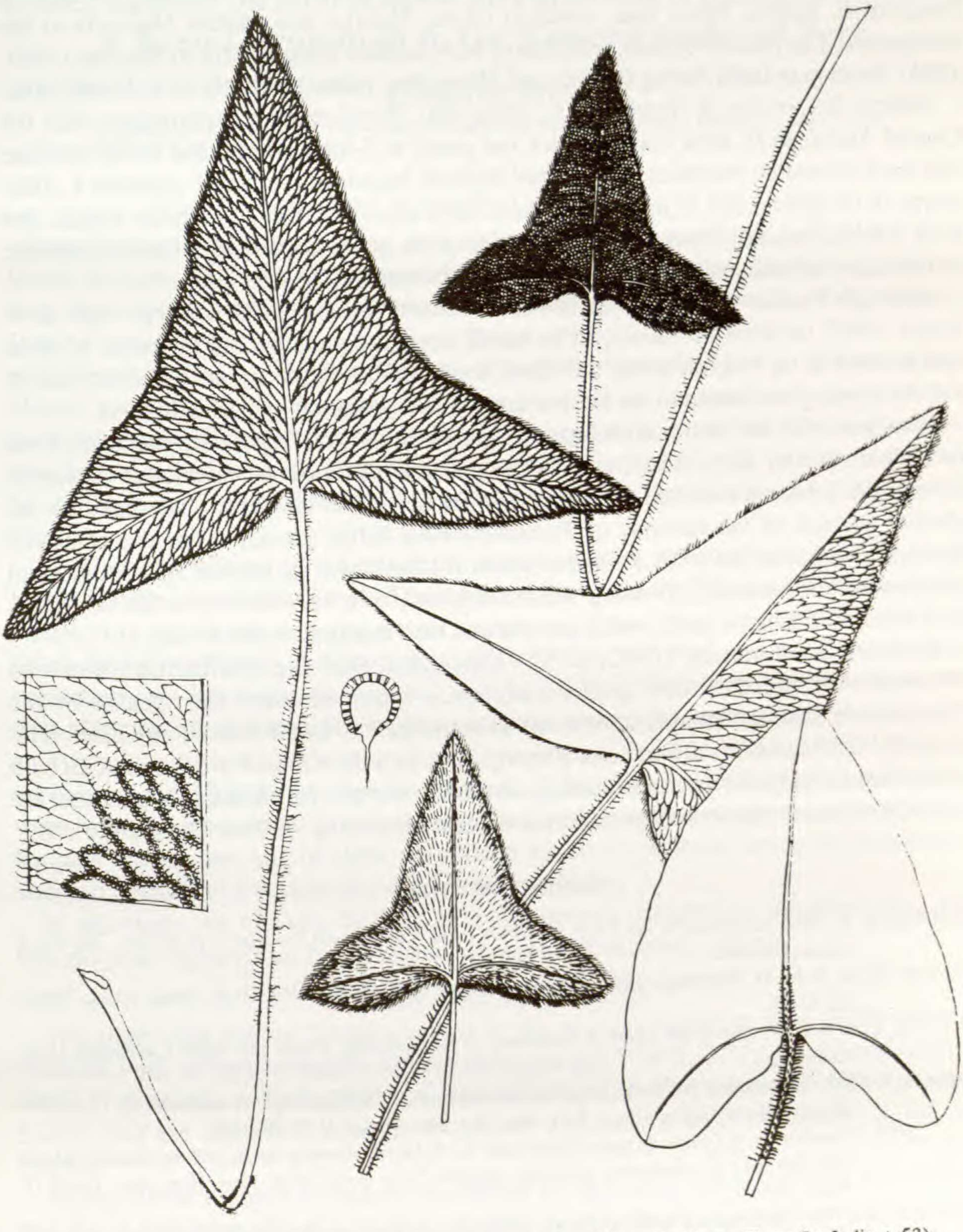

Fig. 1. *Parahemionitis arifolia* (N. L. Burm.) Panigrahi, reproduced from Beddome (Ferns So. India, t. 53).

round) basal lobes and a usually wide sinus, lacking buds at the base of the laminae, more densely pilose on the abaxial surface, the hairs obscurely jointed, pale tan; sporangia borne all along the veins, exindusiate; $2\underline{n} = \text{“}\underline{n}\text{”} = 90$ (obligate apogamous triploid) or 120 (obligate apogamous tetraploid).

Parahemionitis arifolia is distributed in India (South India to Orissa), Sri Lanka, Bangladesh, Burma, Indo-China, southern China, Malaya, and eastern Malaysia to the Philippines. The petiolar bulbils, which have been studied anatomically by Nicolas (1983, 1985), develop in India during October and November, rather profusely so in South India.

Among the species of *Hemionitis* L. sensu lato, *Parahemionitis* approaches only the Central American *H. levyi* Fourn., which has entire to 3-lobed sterile and fertile laminae and erect-ascending rhizomes. The related tropical American species *H. palmata* L. (lectotype of the genus) and *H. pinnatifida* Baker have short rhizomes, dimorphic fronds, and 5- or 7-lobed laminae. Other American species of the genus have 5- or 7-lobed or pinnate or bipinnate laminae, and some have creeping rhizomes.

Although *Parahemionitis* approaches some Asiatic species of *Doryopteris,* such as *D. ludens* (Wall. ex Hook.) J. Smith, in its sterile frond morphology, the rhizomes of these species tend to be long-creeping, the stipes scattered, the fertile fronds decidedly lobed, and the sporangia confined to the lamina margins and protected by pseudoindusia.

Parahemionitis has also been compared with *Paraceterach* Copel., a genus considered by Holttum in Airy Shaw (1966) to be monotypic and restricted to Queensland, Australia. Tryon (1987) later transferred several additional species to the genus. The hairs on the abaxial surface of the laminae of *Parahemionitis* differ greatly from the scales of *Paraceterach marantae* (L.) Tryon (syns. *Notholaena marantae* (L.) Desv. and *Cheilanthes marantae* (L.) Domin), which are broad, soft, and also are unlike the scales of *P. muelleri* (Hook.) Copel., which are stiff and bear marginal teeth of cilia.

Benham & Windham (1992, p. 55) concluded that the similarities between *Paraceterach* and their new genus *Astrolepis,* which includes the species of the *"Notholaena sinuata"* complex, were due to convergence, rather than to any close relationship. *Parahemionitis* differs from *Astrolepis,* as as it does from *Paraceterach,* in both lamina indument (hairs vs. scales) and in dissection (simple vs. pinnate). In addition, the base chromosome numbers differ in part in the three genera ($\underline{x}$ = 30 vs. 29 vs. 29 or 30).

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